

- Goals**
- Bisect a segment.
 - Bisect an angle.

VOCABULARY

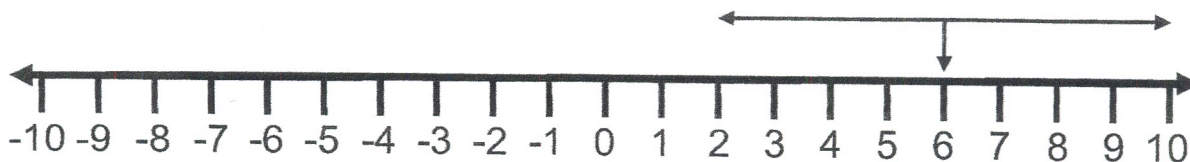
Midpoint

Bisect

Segment bisector

Angle bisector

Example 1: Find the midpoint between 2 and 10. If we count from each side the same number of units, we find that the midpoint between 2 and 10 is 6.



We also find the midpoint between two numbers by adding the numbers together and dividing the sum by 2.

Let a = the first value. Let b = the second value. Let m = the midpoint.

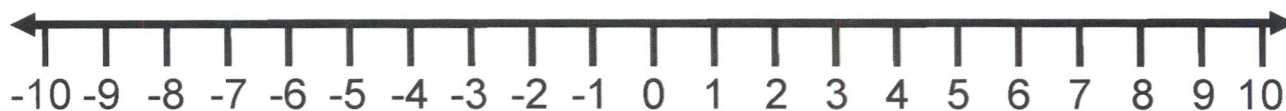
$$m = \frac{a+b}{2}$$

Example 1: Find the midpoint between 2 and 10.

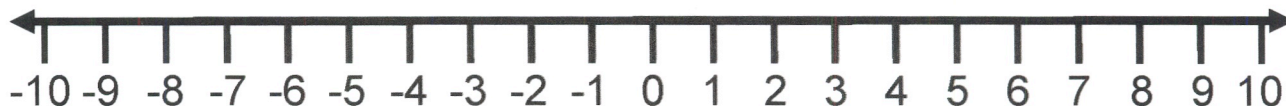
$$m = \frac{a+b}{2} \Rightarrow m = \frac{2+10}{2} = \frac{12}{2} = 6$$

Find the midpoint in the following problems by using a number line.

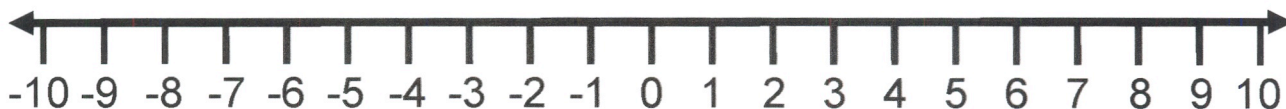
1. Find the midpoint between 1 and 9.



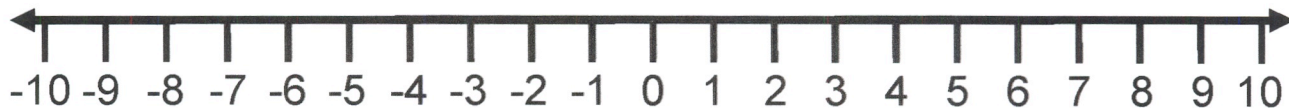
2. Find the midpoint between 0 and 5.



3. Find the midpoint between -6 and 2.



4. Find the midpoint between -8 and -1.



Find the midpoint by using the midpoint formula: $m = \frac{a+b}{2}$. Show all your work.

1. Find the midpoint between 20 and 6.

2. Find the midpoint between 12 and 40.

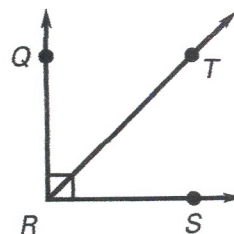
3. Find the midpoint between -10 and 100.

4. Find the midpoint between -20 and 5.

5. Find the midpoint between -30 and -15.

Example 3 *Dividing an Angle Measure in Half*

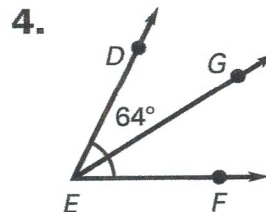
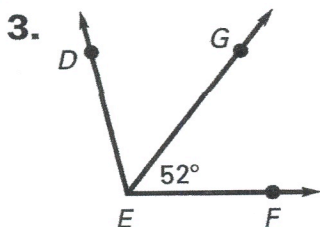
\overrightarrow{RT} is the angle bisector of $\angle QRS$. Given that $m\angle QRS = 90^\circ$, what are the measures of $\angle QRT$ and $\angle TRS$?



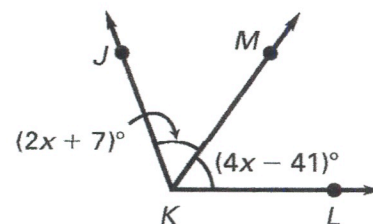
An angle bisector divides an angle into _____, each of which has half the measure of the original angle. So,

$$m\angle QRT = m\angle \underline{\hspace{1cm}} = \underline{\hspace{1cm}} = \underline{\hspace{1cm}}.$$

✔ **Checkpoint** \overrightarrow{EG} is the angle bisector of $\angle DEF$. Find the two angle measures not given in the diagram.

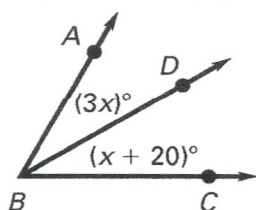


In the diagram, \overrightarrow{KM} bisects $\angle JKL$.
The measures of the two congruent angles are $(2x + 7)^\circ$ and $(4x - 41)^\circ$.
Find the measures of $\angle JKM$ and $\angle MKL$.

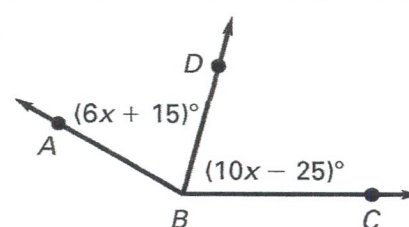


✓ **Checkpoint** \overrightarrow{BD} is the angle bisector of $\angle ABC$. Find $m\angle ABD$ and $m\angle DBC$.




5.



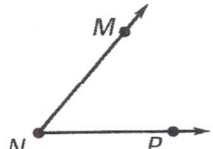
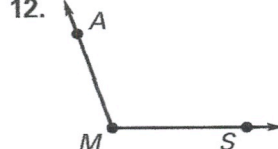
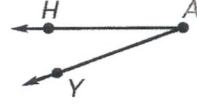
6.



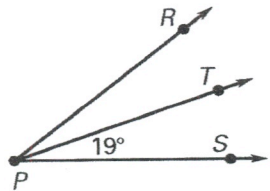
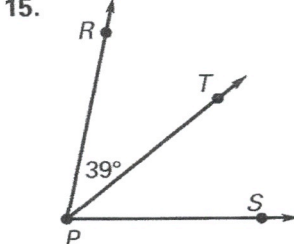
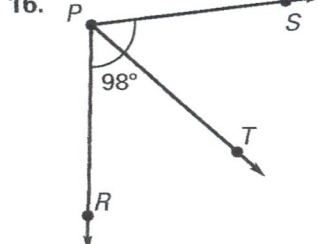
Use a ruler to measure and redraw the line segment on a piece of paper. Then use construction tools to find the segment bisector.

1. 
2. 
3. 

Use a protractor to measure and redraw the angle on a piece of paper. Then use construction tools to find the angle bisector.

11. 
12. 
13. 

\overrightarrow{PT} is the angle bisector of $\angle RPS$. Find the two angle measures not given in the diagram.

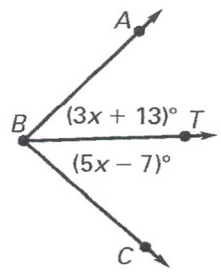
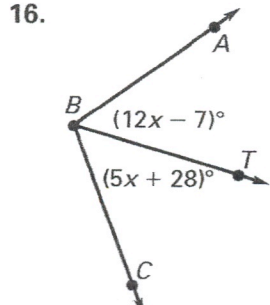
14. 
15. 
16. 

NAME _____

Practice B

For use with pages 34–42

\overrightarrow{BT} bisects $\angle ABC$. Find the value of x .

15. 
16. 
17. 